

Mathematical Physics

On the cosmic no-hair conjecture in the Einstein-Vlasov setting

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The standard starting point in cosmology is the assumption of spatial homogeneity and isotropy. However, it is preferable to prove that solutions generally isotropise and that the spatial variation (as seen by observers) becomes negligible. This is expected to happen in the presence of a positive cosmological constant; in fact, solutions are in that case expected to appear like the de Sitter spacetime to observers at late times. The latter expectation goes under the name of the cosmic no-hair conjecture. In the talk, we present a result (based on joint work with Håkan Andréasson) concerning a class of spacetimes (T^3 -Gowdy, in the Einstein-Vlasov setting) whose members are neither spatially homogeneous nor isotropic, but which all satisfy the cosmic no-hair conjecture. Moreover, we demonstrate that the members of this class are future stable under general perturbations (without symmetries), and that the perturbed solutions satisfy the cosmic no-hair conjecture.